



**CARL JOHN DRAKE<sup>1</sup>**  
1885-1965

From each generation of entomologists, some have been destined to be leaders in one phase or another of their science, but only a few have acquired outstanding stature and international recognition in at least three phases of entomology. Carl Drake was such a leader, gifted as a developer of young people and administrator in an outstanding department, successful director of large-scale pest control programs, life-long enthusiast and prolific writer on the systematics of Hemiptera, especially of the Tingidae (lacebugs).

Carl John Drake was born at Eagleville, Ohio, July 28, 1885, and he died at Washington, D. C., October 2, 1965. His father, William L. Drake, was of English stock; his mother, Alice A. (Shippy) Drake, was Irish. Carl was the oldest of 4 boys and 2 girls. When he died, only one brother, 16 years his junior, Marion O. Drake of Tiffin, Ohio, survived from the immediate family. The family farm was at Eagleville, Wood County, not far from Toledo, and here Carl began grade school, but the family moved to nearby Seneca County and he

<sup>1</sup> Opening photograph, August 20, 1965, courtesy of Frank W. Mead, Florida Division of Plant Industry. We are also grateful to the following individuals for information concerning Dr. Drake's career and early life: Floyd Andre and Oscar E. Tauber, Ames, Iowa; Marion O. Drake, Tiffin, Ohio; Richard C. Froeschner, Washington, D. C.; F. C. Hottes, Grand Junction, Colo.; Charles H. Richardson, Santa Barbara, Calif.

finished grade school there. He was tall and of strong physique, accustomed to hard work. In the last year of his life he told an associate how as a youth he got jobs on neighboring farms at just a few dollars per week, and how he sometimes was paid one dollar weekly more than other boys because he worked that much harder.

At an early age Carl planned to be a teacher, and for several years attended night classes at Heidelberg Academy, in Tiffin, near home, and for 4 years he taught grade school while studying at night. Later, he studied full-time at Heidelberg and played actively on the football and basketball teams. From Heidelberg Academy, Carl went to Baldwin-Wallace College, Berea, Ohio, was graduated with Bachelor of Science and Bachelor of Pedagogy degrees in 1912, and he did some instructing there during the summers of 1912-15. Again, he played basketball, and years later he proudly displayed a photograph of the team and ascribed to quick reflexes his success in athletics. A college roommate was Raymond Moley, later a member of the Franklin Roosevelt administration and a featured columnist of Newsweek.

Carl was a graduate student at Ohio State University during 1913-17, including three summers, and in that period he served successively as graduate assistant, assistant, and instructor in the Department of Zoology & Entomology. The first mention of a serious interest in biology which we have found recorded is his work at the Lake Laboratory, Cedar Point, Ohio, in August 1913. There he worked on the food of frogs. His first scientific note, "An occurrence of *Atypus milberti* Walck. in Ohio," dealing with a spider species which was unusual that far north, taken from a stomach of *Rana pipiens* at Cedar Point, appeared in 1914. A significant paper appeared in 1914 in which he summarized his observations on the food of frogs; years later he would refer with pride to this early work. During those formative years Carl Drake was under the tutelage of the master teacher and pioneer hemipterist, Professor Herbert Osborn, who encouraged him to select an insect group for specialization and stick with it, so it is not surprising that he began the serious study of Hemiptera. His first papers on the systematics of Hemiptera were co-authored with Osborn; their 36-page report on lacebugs of Ohio appeared in 1916, and the first paper on Hemiptera by Drake alone was on a new tingid from Tennessee, also published in 1916. Apparently the association with Herbert Osborn was very important in influencing Drake's growing specialization in Hemiptera systematics. At about the time his work at Ohio State was maturing, his interest in Tingidae received a big boost when he acquired the private collection of Hemiptera made by Frank M. McElfresh, once a graduate student at the University of Illinois, who was forced by ill health to abandon his studies and who died at an early age. When describing a Haitian tingid from the McElfresh collection in 1918, Drake wrote

"I have named the species in honor of the late Frank M. McElfresh, a great student, collector and worker in this group of insects. Although Mr. McElfresh had excellent knowledge of this group of insects and was preparing to monograph the Tingidae of North America he left no notes or manuscripts and had published no papers on the Tingids."

Drake completed formal training at Ohio State in 1917, but did not receive the Ph.D. degree until 1921. His thesis, as a unit, was never published, and we assume that parts of it were incorporated in various publications. From Ohio he went to Syracuse University where he taught as a specialist in entomology in the School of Forestry, 1917-22, advancing from instructor to professor. Although he continued research work on Hemiptera, did comprehensive ecological and systematic work on Hemiptera of the Cranberry Lake Region of New York during that period, and also pursued tingid systematics, he became fascinated by bark beetles, learned to recognize the most important species of Scolytidae, and in 1921 described a new species of ambrosia beetle, the only new species he described outside of Hemiptera. Two summers during these years were spent in the Southeast, that of 1918 employed by the Florida Agricultural Experiment Station, in 1921 at the Experiment Station of Mississippi State College. One result of the 1918 work was his 53-page paper published in 1920 on the southern stink bug, *Nezara viridula* (L.). In July 1921, while collecting Hemiptera on cypress trees in Mississippi, he found specimens of an unusual, distinctively streaked, narrow-winged katydid; this proved to be a striking new genus, described by Caudell as *Inscudderia taxodii*, later found peculiar to cypress elsewhere in the Southeast.

Dr. Drake's most important career work, unless it be the sum total of his systematic research, was that done at Iowa State College, Ames, Iowa, since renamed Iowa State University. From his arrival in 1922 until his retirement from administration in 1946 when he concentrated his efforts on systematics, he was Head of the Department of Zoology & Entomology, Entomologist of the Experiment Station, and State Entomologist. He followed Dr. E. D. Ball as Department head, and arrived at a time when the department was ripe for expansion and improvement. He was a forceful leader of broad vision under whose direction a new entomological laboratory was built and equipped, funds were obtained to aid graduate students by scholarships, and notable growth in the library occurred. One of Drake's secrets in training successful students in entomology was his insistence that they first of all acquire a strong foundation in general zoology, botany, physical sciences and mathematics. In addition to entomology his department was very strong in parasitology, protozoology, physiology



Photo about 1935, during Dr. Drake's teaching years, courtesy of Iowa State University.

and wildlife management, and pioneered in insect toxicology and physiology. To obtain qualified teachers and find openings for graduates of the department, he developed very wide contacts and made special trips to Woods Hole and other centers.

In Dr. Drake's later years he showed much satisfaction with the successes achieved by graduates of the department he formerly headed, and by those attracted to Ames for advanced degrees, and he would recall his experiences in appraising the qualities and training needs of various individual students. While teaching actively he took a personal interest in students, even helping some financially, and he particularly encouraged able students to work toward advanced degrees. Doubtless because of his accomplishments, he was Chairman of a committee of the American Association of Economic Entomologists which studied training requirements of professional entomologists, and in 1931 he reported on replies obtained from a questionnaire sent to some 50 leading specialists and teachers. Perhaps as an outgrowth of this activity, in 1936 he published an article giving his opinions regarding the broad base, the well planned schedule of courses, habits of library browsing, the development of fundamental interests, and other aspects of an entomologist's background. He emphasized that the training of research entomologists should include the actual doing of research. From graduate students he expected an excellent performance and many hours of work. He required a high standard of writing, was patient at least with first mistakes, and hoped that after a thesis was published the man would continue to be productive. His own enthusiasm, hard work and productivity must have inspired many students.

Since Dr. Drake's death, nearly all entomologists with whom we have discussed his impact on the science have stressed the large number of biologists in outstanding positions throughout the United States, and some abroad, who went on from Ames. As a small sample of such former students, and others, mostly entomologists and wildlife workers, coming under Drake's influence, we would list the following (in alphabetical order): Floyd Andre, Thomas S. Baskett, José C. M. Carvalho, Robert Coatney, George C. Decker, Paul L. Errington, Christian Farstad, Bentley B. Fulton, James Grayson, H. M. Harris, Ephraim Hixson, E. F. Knipling, Randell Latta, Dale Lindsey, Clay Lyle, Harlow Mills, Kenneth E. Penrod, Lloyd Rozeboom, Thomas G. Scott, Silas S. Sharp, James A. Slater, George Sprugel, H. D. Tate, Oscar E. Tauber, and B. V. Travis.

In Iowa under Dr. Drake's leadership there was an expansion of entomological research in the Experiment Station and activities by the State Entomologist. Losses from grasshoppers, chinch bugs and other agricultural pests greatly increased during the drought years of the 1930's, and he demonstrated vigorous organizational ability in directing large scale control programs which involved numerous baiting-mixing stations, tank-car lots of poison, and bran and sawdust in freight-car lots. Undoubtedly, his early experience on the farm gave him a practical point of view and increased his effectiveness. He pioneered in Iowa with the newer insecticides and in applications from airplanes. During World War II, when some insecticides were in short supply, he ingeniously helped develop the use of certain toxic materials as substitutes, and after the War he and Dr. Oscar Tauber were the first entomologists in Iowa to conduct small field tests of DDT.

For about two months, in November 1938-January 1939, Dr. Drake and Professor Charles H. Richardson were in Argentina, studying grasshopper problems there and demonstrating methods of bait preparation and application. The trip was by invitation of the Sociedad Rural, an association of large Argentine farm owners and operators, which recognized the accomplishments in Iowa and in 1937 had published in Spanish an article by Drake on the Iowa experiences in grasshopper control. In conjunction with the Argentine trip, several other South American countries were visited, and some collecting, at least of Orthoptera and Hemiptera, was done.

Dr. Drake was a member of the National Plant Board in 1935-42, and as its Chairman in 1941-42 he took a special interest in its activities and the legal basis for its work. In 1942 he published a 52-page report summarizing the various laws, regulations and rulings pertaining to the Plant Board. He was Chairman of the Central States Plant Board in 1945-46.

After his retirement from administration in 1946, Dr. Drake re-

mained in Ames except for trips, busy with the taxonomy of Hemiptera, chiefly Tingidae, until January 1957, when he moved to Washington, D. C., at the same time presenting his collection of Hemiptera to the Smithsonian Institution. At the U. S. National Museum, a unit of the Smithsonian Institution, he became a Research Associate, unsalaried, but with the assistance of a Smithsonian technician and with support from a National Science Foundation Grant, the latter used mainly for artist service and other technical assistance. Here he remained very active, usually working nearly seven days a week, until 3 weeks before his death. A revision of the genus *Corythuca* was under way at the time of his death, and it may be completed by Dr. R. C. Froeschner, a close friend and associate at the National Museum.

Carl Drake died October 2, 1965 in the Washington Hospital Center, from complications following a serious diabetic and circulatory condition that was discovered when he collapsed at his residential hotel about 3 weeks earlier. Burial was in Ohio in accordance with wishes given to his youngest brother about 3 years before. For several years his health had declined, but it was not his nature to have medical check-ups or even a regular consulting physician, and his life probably was shortened as a consequence. Most of his life he enjoyed good health, though as a young man he suffered complications from mumps, and in early 1939 he returned from Argentina with a serious epigastric hernia which was corrected by surgery. (The operation removed his navel, and he often said this made him the original Adam). His enthusiasm for further work seldom waned. Three days before his death he told visitors of plans for a supplement to the tingid catalog and other systematic work.

Taxonomy was the phase of entomology closest to Carl Drake's heart, and it was his chief activity after retirement. During his prime years at Ames he occasionally hunted and fished, played a good game of bridge, was a member of the Ames Golf and Country Club where he sometimes played golf, but these activities remained of secondary interest. He always found time for Hemiptera systematics, an hour or two here and there, and most evenings and week-ends. By and large, he simply worked all of his waking hours. Although a member of many professional societies, and an active leader in several of them, they did not crowd out his beloved taxonomic research.

Dr. Drake remained a bachelor, and the lack of family responsibilities probably explains in large measure how he found time to accomplish so much, and why his devotion to entomology, especially systematics, became so strong. He felt very close to his mother, and provided for much of her care for many years. Apparently he naturally liked people, as evidenced by his friendly relations with students and associates. He enjoyed giving presents to friends, for instance

dolls to the children of his associates, and seemed to delight in making them happy. Although he was not a man of narrow personality, it probably is unfortunate that he remained unmarried; a family of his own doubtlessly would have broadened his social growth, improved his personal neatness, and made his retirement years less lonely. As it was, his circle of close friends was rather limited during his last years, and for much of his life he was pretty much of a "loner." Working under him was not always easy because he changed plans frequently as new ideas developed.

Hemiptera specialists the world over will be glad to learn that a full bibliography of Dr. Drake's publications and a list of the species he described has been prepared by Mrs. Florence A. Ruhoff, who served as his assistant during the Smithsonian years.<sup>2</sup> Publication of this valuable record is expected, and we are indebted to Mrs. Ruhoff for certain facts derived from her compilation. His publications on all phases of entomology, including 3 now in press, total 518. At least 105 papers concern applied entomology, and some 253 are with co-authors, who varied greatly in the degree of participation. Some co-authors merely collected specimens, and Drake was glad to extend co-authorship in recognition of their contribution and to encourage further work; at other times the portion contributed by a second author was a very important share of the total effort. Among the co-authors the following especially may be mentioned: Herbert Osborn, with whom Drake began systematic research; H. M. Harris, former student and staff member at Ames, who collaborated with him extensively on Gerridae, Nabidae and other non-tingid families; F. C. Hottes, a former student who co-authored numerous papers, dealing especially with Gerridae and Saldidae; Edson J. Hambleton, who collected Tingidae consistently during his many years abroad, particularly in South America; George C. Decker, a former student and colleague, with whom he worked on numerous projects in applied entomology; Margaret E. Poor (Mrs. Hurd), who was associated with him at Ames at least 10 years and with whom he prepared about 20 papers on Tingidae; Norman T. Davis of the University of Connecticut, who contributed very importantly to joint papers which correlated morphology and systematics; Florence A. Ruhoff, who assisted him at the Smithsonian, collaborating in the important comprehensive work of his 9 years in Washington. More than 60 papers each contain more than 12 pages.

In his taxonomic work Drake was basically a describer of new species, which of course were to be found in large numbers both in the United States and abroad. Since coming to Washington more of

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<sup>2</sup> Mrs. Ruhoff is now in the Division of Mollusks, U. S. National Museum, and is not continuing work with Hemiptera.

his papers were of a comprehensive character than before, doubtlessly reflecting the freedom from nonsystematic responsibilities, the assistance available to him, and the incentives derived from daily associations at the National Museum and from the participation in long-term projects supported by NSF. However, he published few keys and for unknown reasons he never depended on them. The final years at Ames, beginning a little prior to his retirement, had been marked by some deterioration in the pleasantness of his personal associations, so the move to Washington was the start of a period when undivided attention could be given to the Hemiptera, amid basically congenial surroundings.

The supreme publication of Drake's career, appearing only 7 months before his death, was "Lacebugs of the World: A Catalog," compiled by himself and Mrs. Ruhoff, complete with a wide range of introductory information about the family Tingidae and illustrated by 56 plates of beautiful and very useful drawings. In recent years he had enjoyed the services of several highly accomplished illustrators who made habitus drawings of a large number of tingids. More basic morphology and concern for zoogeographic aspects were brought into his work than had been true during earlier years, giving breadth to several of the larger papers. He was anxious to present biological information, when available, about tingids living in specialized ecological niches, such as the myrmecophiles and gall-producing species.

At the U. S. National Museum, Dr. Drake's superb collection of Hemiptera and associated library are very valuable acquisitions. In the Tingidae, 1,482 species from a total of 1,820 species recognized as valid for the world were contained in the Drake Collection when the catalog was written. Among other families of Hemiptera, the aquatic and semi-aquatic Heteroptera for the Americas are very well represented. He described 1,480 new species, the great majority in the Tingidae. Whenever possible he augmented his collection by purchase; especially valuable specimens already assembled were the collections of Henry Hacker of Australia, Edwyn C. Reed of Chile, and various lots from Nicolas A. Kormilev of South America and more recently New York.

Dr. Drake enjoyed collecting Hemiptera and did so when time permitted; in fact, most of his travels during his main active years included some collecting or visits to museums. However, because of specialized collecting, large amounts of general material did not accrue from his field work. He liked to take a graduate student or other associate and go on an extended collecting trip; in this manner he made several collecting trips in the western states and one each to Canada and Mexico with F. C. Hottes. He made many collecting trips, including a long one to California, with Floyd Andre, and a long one to the Southwest with Earl Pritchard. Dr. Andre has re-



called the pleasure he himself experienced as a student while in San Francisco with Dr. Drake because of their going on a special collecting trip one day with Harry G. Barber and Edward P. Van Duzee. Drake made at least one trip to visit European museums, and he was a great admirer of the facilities available at the British Museum for studying insects on a world-wide basis. He had looked forward to a Russian visit, wished to wait until his catalog was published, and unfortunately delayed too long.

Although Dr. Drake was generous and spent freely for things especially desired, he was basically frugal, accustomed to plain living, a habit probably stemming from the absolute need for thrift during his early years. From the standpoint of saving, he had the advantages of no family to support and excellent positions as his professional career developed. He invested his savings wisely, beginning to do so before the tremendous economic growth in the United States which followed World War II, and as a consequence accumulated what, for an entomologist, was virtually a small fortune. His will had not been settled when this biography was written, but enough was known of its stipulations to realize that he wished for the principal portion of his estate to support, on a continuing basis, systematic research with Hemiptera-Heteroptera. In part due to his strong feeling of national loyalty, he designated the U. S. National Museum as the center for this research.

So closed the life and career of one essentially dedicated to entomology for half a century, whose energies were channeled into making the world's rich insect fauna better known, who played a leading part in training numerous young people for industrious lives and professional careers, and who, as his own long life neared completion, placed the physical products of his labors where they will further serve scientific achievement.

ASHLEY B. GURNEY, *Chairman*,  
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